

**ORDER No. AD9810180A3**

# Service Manual

**IC RECORDER**

Please file and use this manual together  
with the service manual for Model  
No. RR-DR60, Order No. AD9807107C1.

**RR-DR60**

**(S).....Silver**

**GC.....Asia, Latin America,  
Middle East and Africa**



## **SPECIFICATIONS**

### **Specification**

Power requirement:	DC3V(two R03/LR03,AAA,UM-4 batteries)
__Memory Back-up;	DC3V(Built-in Lithium battery) About 3 minutes
Recording system:	CELP Type(Code Excited LinearPredictive)
__Sampling frequency;	6 kHz
__Data transfer rate;	4 kbit/s
__Digital filter;	8 bit $\mu$ -law
__Memory size;	16 Mbit(Flash)
Recording capacity:	60 minutes / 99 items
Power output:	110 mW RMS (max)
Speaker:	2.8 cm 8 $\Omega$
Output jack:	Earphone 2.5mm(diam.) 16 $\Omega$
Dimensions (WxHxD):	55.8 x 91.5 x 13.7 mm
Weight:	
__with batteries;	About 69g
__without batteries;	About 46g
Battery life:	
__Batteries;	Panasonic alkaline battery
__Playback;	About 8 hours
__Recording;	About 10 hours
[When used at 25°C(77°F) temperature and on a flat and stable surface]	

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#### WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

# Panasonic®

## 1. Simplement Guide

This manual mention the revision of RR-DR60P-S.

- Operating Instruction (Addition "The operation tone")
- Schematic Diagram (Original)
- Printed Circuit Board Diagram (Original)
- Replacement Parts List (Original)
- Packaging (Original)

The other items are refered service manual for RR-DR60P-S.

## 2. Operating Instruction Addition

## 3. Schematic Diagram

### 3.1. MAIN CIRCUIT

### 3.2. MAIN CIRCUIT

### 3.3. MAIN CIRCUIT

## 4. Printed Circuit Board Diagram

### 4.1. MAIN P.C.B.

### 4.2. MAIN P.C.B.

## 5. Replacement Parts List

### Note:

Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, Be sure to use only manufacturer~s specified parts shown in the parts list.

The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

Parts without these indications can be used for all areas.

Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F= Farads(F)

Resistance values are in ohms, unless specified otherwise, 1k=1,000(ohm), 1M=1,000k(ohm)

The "<IA>,<IB>,<IC>" marks in Remarks indicate language of instruction manual.

<IA>:English, Spanish, Japanese, Chinese, Arabic

<IB>:English, <IC>:Canadian French

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGV0230-K	KNOB,PLAY/SEL/STOP	1	
2	RGV0231-K	KNOB,HOLD	1	
3	RHQ0051-K	SCREW	3	
4	RGL0420-Q	PANEL,LIGHT	1	
5	RGU1673-K	BUTTON,10 SEC REVIEW	1	
6	RGV0232-K	KNOB,SPEED CONTROL	1	
7	RKK0115-S	BATT.COVER	1	
8	RKS0290B-1S	REAR CABINET	1	
9	RFKDRDR60P-S	JOG SW ASS-Y,PLAY/STOP	1	
10	RJM0016	MICROPHONE	1	
11	RMG0496-H	ZEBRA GUM	1	
13	RSL5213-T	LCD(LCD101)	1	
14	RAS3P13-U	SPEAKER	1	
16	RGU1669-1S	BUTTON,MODE	1	
17	RGU1670-R	BUTTON,REC START/STOP	1	
18	RGU1671-K	BUTTON,ERASE	1	
19	RJC40015	BATT.TERMINAL(+)	1	
20	RJC80017	BATT.TERMINAL(-)	1	
21	RJC94013-2	BATT.TERMINAL	1	
22	RMZ0466	SHEET	1	
23	RYK0859-S	FRONT CABINET ASS-Y	1	
24	XQN2+CQ3	SCREW	2	
25	XTNR2+5CFN	SCREW	2	
A1	RQT4801-G	INSTRUCTION MANUAL	1	<1A>
A2	RQCB0169>	SERVICE CENTER LIST	1	
C1	ECUV1C154KBN	16V 0.15U	1	
C2	ECST0GY226RR	4V 22U	1	
C4	ECUZNC104ZFV	16V 0.1U	1	
C5	ECUVNA105ZFV	10V 1U	1	
C6	ECUVNA105KBN	10V 1U	1	
C7,C8	ECUZNC104ZFV	16V 0.1U	2	
C9	RCST0GA106RE	4V 10	1	
C10	ECUV1H151KBV	50V 150P	1	
C13	ECST1CY105RR	16V 1U	1	
C14	ECUZNC104ZFV	16V 0.1U	1	
C16	ECUV1H100DCV	50V 10P	1	
C17	ECST0GX476R	4V 47U	1	
C19	ECUV1H332KBV	50V 3300P	1	
C20	ECST0GY226RR	4V 22U	1	
C21	ECUZNC104ZFV	16V 0.1U	1	
C22	ECST0GY106RR	4V 10U	1	
C23	ECUVNC473KBV	16V 0.047U	1	
C24	RCSX0GC157RE	4V 150U	1	
C25	ECUZNC104ZFV	16V 0.1U	1	
C27	ECUZNC104ZFV	16V 0.1U	1	
C28	ECUV1C105ZFN	16V 1U	1	
C29	ECUZNC104ZFV	16V 0.1U	1	
C30,31	ECUV1H102KBV	50V 1000P	2	
C32	ECUZNC104ZFV	16V 0.1U	1	
C37	ECUV1E103KBV	25V 0.01U	1	
C38	ECUV1H220KCV	50V 22P	1	
C39	ECUV1H120KCV	50V 12P	1	

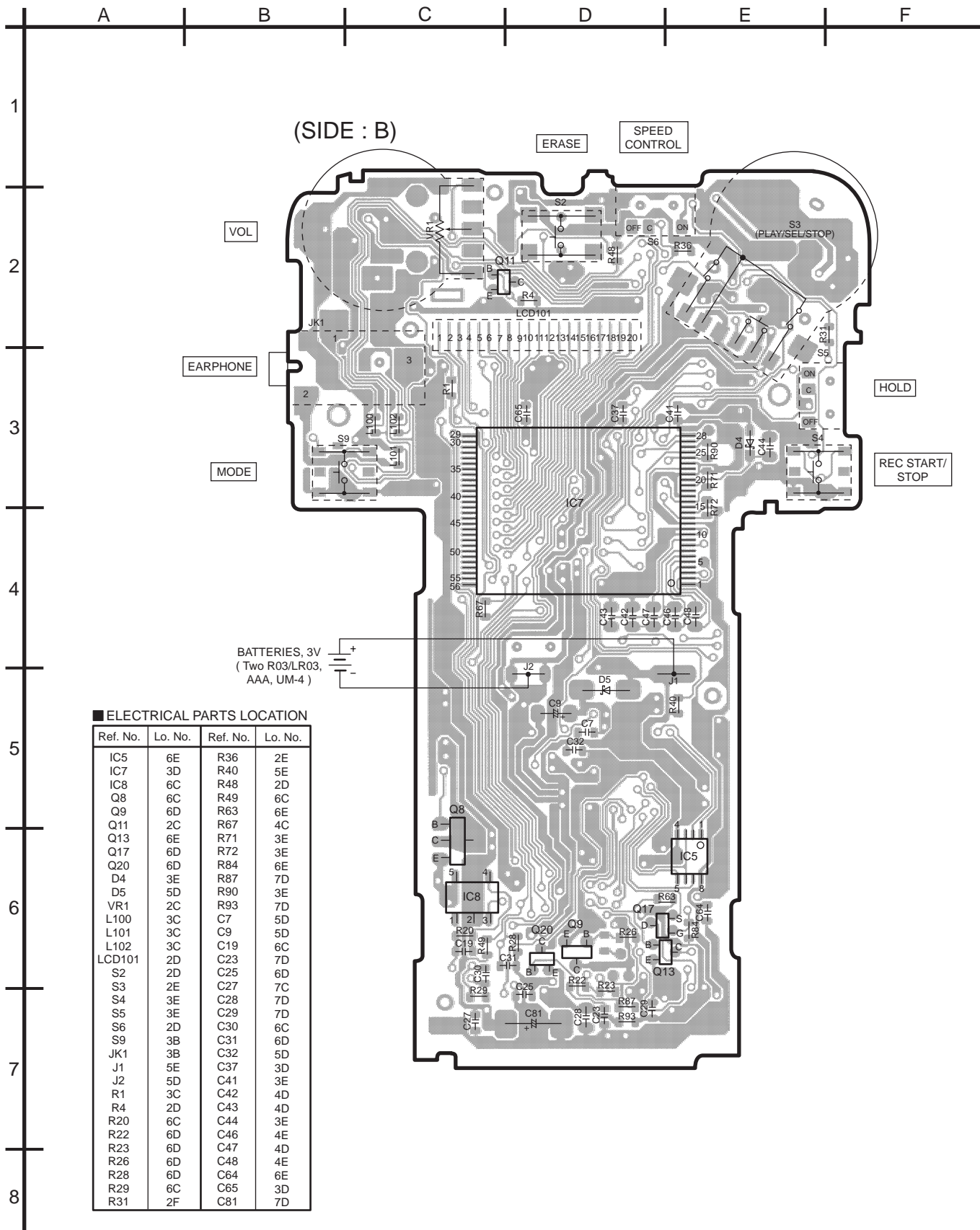
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C40	ECST0GY226RR	4V 22U	1	
C41	ECUZNC104ZFV	16V 0.1U	1	
C42,43	ECUV1H101KCN	50V 100P	2	
C44	ECUVNC224KBN	16V 0.22U	1	
C45	ECUVNA154KBV	10V 0.15U	1	
C46-48	ECUV1E154ZFN	25V 0.15U	3	
C49,50	ECUZNC104ZFV	16V 0.1U	2	
C60	ECUZNC104ZFV	16V 0.1U	1	
C61	ECST0GY106RR	4V 10U	1	
C63-65	ECUZNC104ZFV	16V 0.1U	3	
C69	ECUV1C104KBV	16V 0.1U	1	
C77	ECUVNJ105KBV	63V 1U	1	
C81	RCSX0GC157RE	4V 150U	1	
CN1	RJT120C02T	CONECTOR(2P)	1	
D1	LNJ210C6RRA	LED	1	
D2	MA735TX	DIODE	1	
D4	MA728TX	DIODE	1	
D5	MA735TX	DIODE	1	
D6	MA729TX	DIODE	1	
IC1	MSM7702-02MS	IC	1	
IC2	MN1931712BB	IC	1	
IC3	TC7WU04FUT2L	IC	1	
IC4	MN101C16ACA3	IC	1	
IC5	TC7W126FUT2L	IC	1	
IC6	XC61AN2002MR	IC	1	
IC7	SDTB-16A	IC	1	
IC8	XC6372D331PR	IC	1	
IC9	NJM2113VTE1	IC	1	
JK1	RJJ23TK01-1H	JACK,EARPHONE	1	
L1	RL09U028T-T	COIL	1	
L100-02	ERJ3GEY0R00V	CHIP JUMPER	3	
P1	RPK1124	PACKING CASE>	1	
P2	RPF0208	PROTECTION COVER	1	
Q1	2SD1819ASTX	TRANSISTOR	1	
Q2	2SB1218ASTX	TRANSISTOR	1	
Q3	2SD1819ASTX	TRANSISTOR	1	
Q4	2SD1328STX	TRANSISTOR	1	
Q5	2SD1819ASTX	TRANSISTOR	1	
Q6	2SB1218ASTX	TRANSISTOR	1	
Q8	2SD1119RTX	TRANSISTOR	1	
Q9,10	2SB1295-6-TB	TRANSISTOR	2	
Q11	2SD1819ASTX	TRANSISTOR	1	
Q13,14	2SD1819ASTX	TRANSISTOR	2	
Q16	2SB1295-6-TB	TRANSISTOR	1	
Q17,18	2SK1958T1	TRANSISTOR	2	
Q20	2SB1218ASTX	TRANSISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R1	ERJ3GEYJ152V	1/16W 1.5K	1	
R2	ERJ3GEYJ102Z	1/16W 1K	1	
R3	ERJ3GEYJ104Z	1/16W 100K	1	
R4	ERJ3GEYJ393V	1/16W 39K	1	
R5	ERJ3GEYJ103Z	1/16W 10K	1	
R6	ERJ3GEYJ104Z	1/16W 100K	1	
R7	ERJ3GEYJ223V	1/16W 22K	1	
R8	ERJ3GEYJ101V	1/16W 100	1	
R10	ERJ3GEYJ102Z	1/16W 1K	1	
R11	ERJ3GEYK106V	1/16W 10M	1	
R12	ERJ3GEYJ391V	1/16W 390	1	
R13	ERJ3GEYJ104Z	1/16W 100K	1	
R15	ERJ3GEYJ823V	1/16W 82K	1	
R16	ERJ3GEYJ103Z	1/16W 10K	1	
R17	ERJ3GEYJ334V	1/16W 330K	1	
R18	ERJ3GEYJ683V	1/16W 68K	1	
R19	ERJ3GEYJ224V	1/16W 220K	1	
R20	ERJ3GEYJ102Z	1/16W 1K	1	
R21	ERJ3GEYJ333V	1/16W 33K	1	
R22	ERJ3GEYJ560V	1/16W 56	1	
R23	MCR03PZHJ561	1/16W 560	1	
R24,25	ERJ3GEYJ105V	1/16W 1M	2	
R26	ERJ3GEYJ332V	1/16W 3.3K	1	
R27	ERJ3GEYJ472V	1/16W 4.7K	1	
R28,29	ERJ3GEYJ105V	1/16W 1M	2	
R31	ERJ3GEYJ394V	1/16W 390K	1	
R32,33	ERJ3GEYJ124V	1/16W 120K	2	
R34-37	ERJ3GEYJ105V	1/16W 1M	4	
R40	ERJ3GEYJ104Z	1/16W 100K	1	
R41,42	ERJ3GEYJ184V	1/16W 180K	2	
R43,44	ERJ3GEYJ104Z	1/16W 100K	2	
R46-48	ERJ3GEYJ474V	1/16W 470K	3	
R49	ERJ3GEYJ333V	1/16W 33K	1	
R63	ERJ3GEYJ334V	1/16W 330K	1	
R64	ERJ3GEYJ333V	1/16W 33K	1	
R65	ERJ3GEYJ103Z	1/16W 10K	1	
R66	ERJ3GEYJ471V	1/16W 470	1	
R67	ERJ3GEYJ394V	1/16W 390K	1	
R69	ERJ3GEYJ681V	1/16W 680	1	
R71,72	ERJ3GEYJ473V	1/16W 47K	2	
R81	ERJ3GEYJ181V	1/16W 180	1	
R82	ERJ3GEYJ394V	1/16W 390K	1	
R83	ERJ3GEYJ103Z	1/16W 10K	1	
R84	ERJ3GEYJ394V	1/16W 390K	1	
R85,86	ERJ3GEYJ274V	1/16W 270K	2	
R87	ERJ3GEYJ103Z	1/16W 10K	1	
R89	ERJ3GEYJ154V	1/16W 150K	1	
R90	ERJ3GEYJ473V	1/16W 47K	1	
R91	ERJ3GEYJ563V	1/16W 56K	1	
R93	ERJ3GEYJ100V	1/16W 10	1	
R98	ERJ3GEYJ102Z	1/16W 1K	1	
S2	RSG0022-A	SW,ERASE	1	
S3	RFKDRDR60P-S	JOG SW ASS-Y,PLAY/STOP	1	

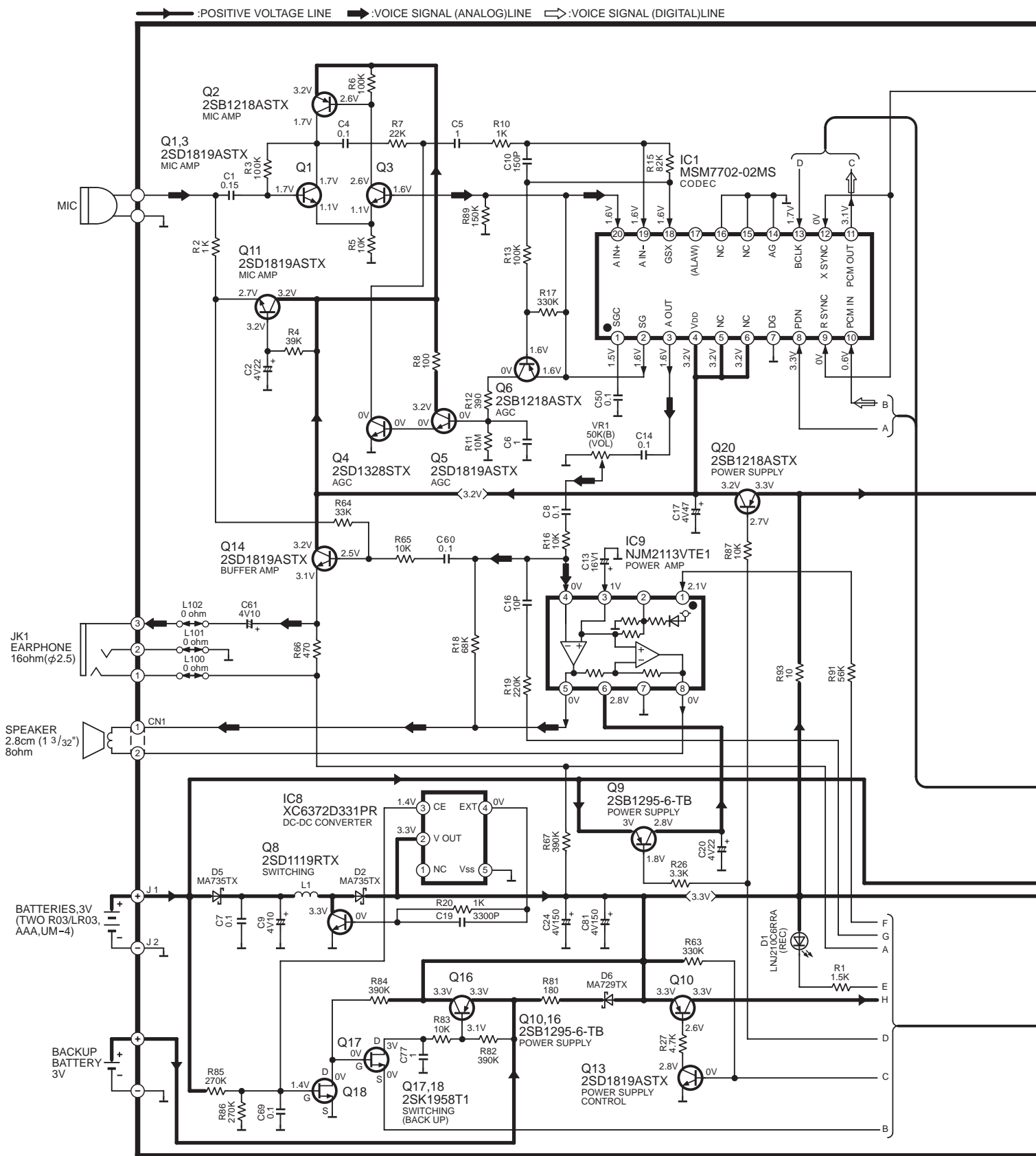
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S4	EVQPLMA15	SW,REC START/STOP	1	
S5-S7	RSS2A009-1A	SW,SELECT	3	
S9	EVQPLMA15	SW,MODE	1	
S11	EVQPLMA15	SW,10 SEC REVIEW/BEEP	1	
VR1	EVUT2KA20B54	VR,VOL	1	
X1	RSXY8M00M07T	CERAMIC OSC	1	
X2	RSXC32K7L04T	XTAL,32K	1	

## 6. Packaging

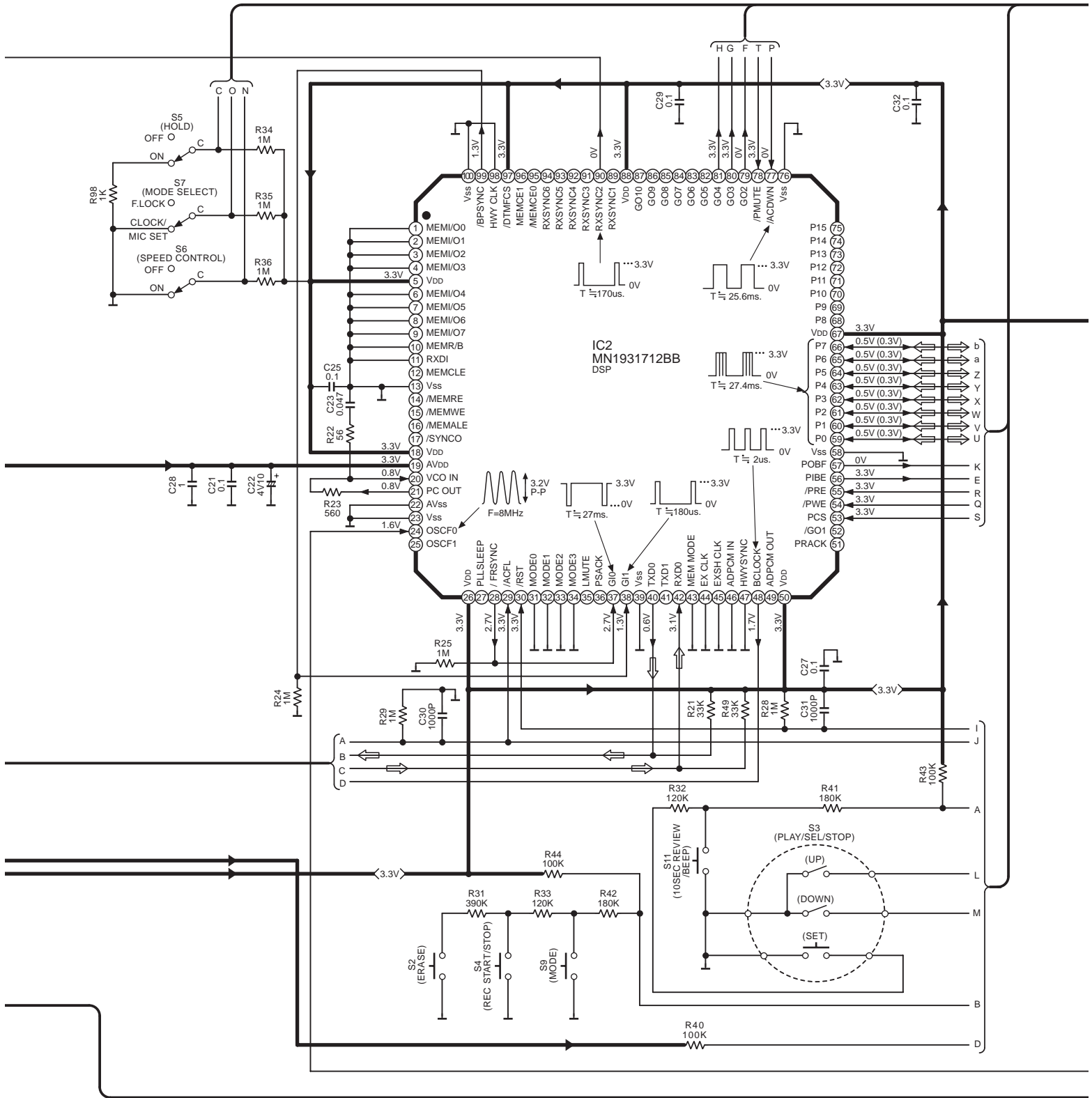
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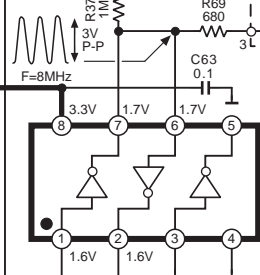


→ : POSITIVE VOLTAGE LINE    ⇨ : VOICE SIGNAL (DIGITAL) LINE

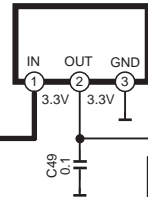


→ : POSITIVE VOLTAGE LINE    ⇨ : VOICE SIGNAL (DIGITAL) LINE

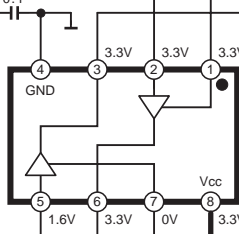
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TC7WU04FUT2L  
TRIPLE INVERTER



IC6  
XC61AN2002MR  
RESET

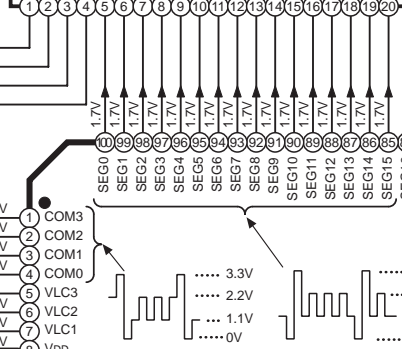


IC5  
TC7W126FUT2L  
BUFFER AMP

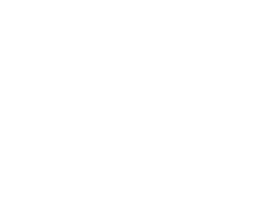
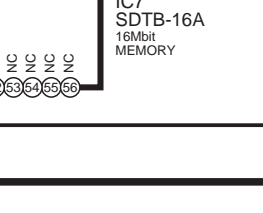
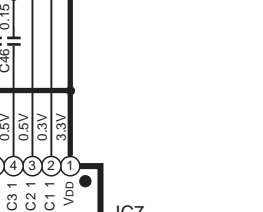
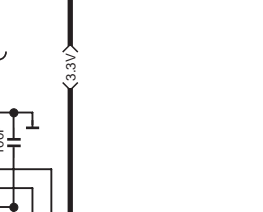
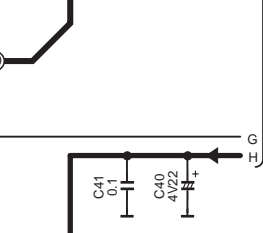
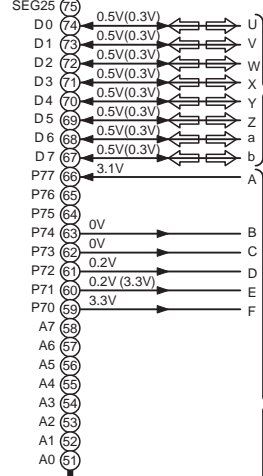
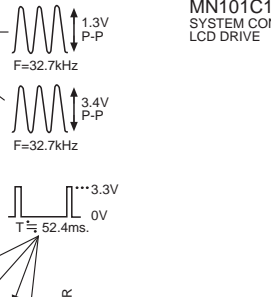


LCD101(RSL5213-T)

LCD DISPLAY



IC4  
MN101C16ACA3  
SYSTEM CONTROL/  
LCD DRIVE

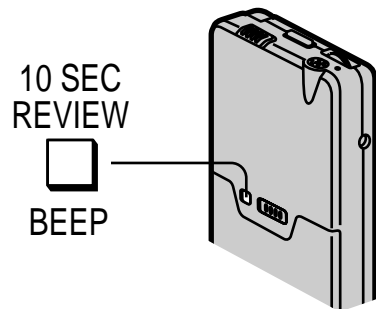


IC7  
SDTB-16A  
16Mbit  
MEMORY



# ***The operation tone***

The operation tone can be turned on or off to suit your preference. (The tone is set not to sound when the unit is shipped.)



**While the unit is stopped, press [10 SEC REVIEW, BEEP] for 2 seconds.**

“BEEP” is displayed for a second and a tone sounds each time the unit is operated.

Repeat the above to turn the tone off again. “OFF” is displayed for a second.




## **For your reference**

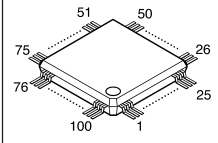
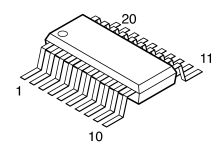
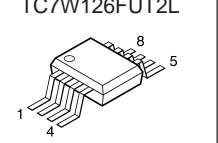
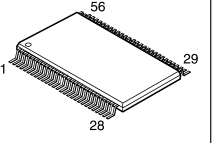
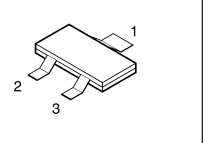
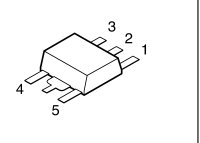
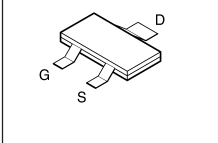
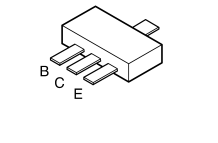
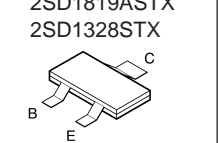
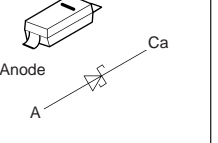
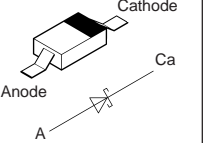
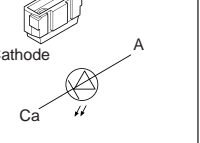
The tone may be turned off if the unit is left without battery power for a time.

Notes:

- S2 : Erase(ERASE) switch.
- S3 : Play/select/stop dial(PLAY/SEL/STOP) switch.
- S4 : Recording start/stop(REC START/STOP) switch.
- S5 : Hold(HOLD) switch to “ON” position.
- S6 : Speed control(SPEED CONTROL) switch to “ON” position.
- S7 : Mode select(MODE SELECT) switch to “CLOCK/MIC SET” position.
- S9: Mode(MODE) switch.
- S11: 10 second review(10 SEC REVIEW) switch.
- VR1: Volume control.
- DC voltage measurements are taken with electronics voltmeter.  
The negative terminal of the battery provides negative meter connection point.
- No mark ... Recording, (     ) .... Playback

- Important safety notice  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacture’s specified parts.
- Signal lines

-  : Voice signal (analog) line
-  : Voice signal (digital) line
-  : Positive voltage line

<div>MN1931712BB MN101C16ACA3</div> 	<div>MSM7702-02MS</div> 	<div>NJM2113VTE1 TC7WU04FUT2L TC7W126FUT2L</div> 	<div>SDTB-16A</div> 	<div>XC61AN2002MR</div> 	<div>XC6372D331PR</div> 
<div>2SK1958T1</div> 	<div>2SD1119RTX</div> 	<div>2SB1218ASTX 2SB1295-6-TB 2SD1819ASTX 2SD1328STX</div> 	<div>MA735TX</div> 	<div>MA728TX MA729TX</div> 	<div>LNJ210C6RRA</div> 

Note: This printed circuit board diagram may be modified at any time with the development of new technology.

